

**ABSTRACT**

**[0116]** A mechanism is disclosed for converting the force from a linear extension spring into a constant force. A cable, connected to the spring, rides in a variable radius input pulley groove. A second cable rides in a variable radius output pulley groove. The dual pulley mechanism is smaller than previous spiral pulley mechanisms. The output force and stroke is a function of the sizes of both pulleys. A standardized design enables a small number of input and output pulleys to cover a large range of applications. An end plug in a helical spring can be used to make fine adjustments to the output force. The pulleys can be accurately phased relative to each other with a spline mechanism. The pulley grooves may lie in a plane, or they may advance in an axial direction as the pulley rotates. By continuously varying the rate of axial advance, the tangent to the groove can be aimed or focused at an external point. The focused groove reduces cable friction and wear. Axially advancing the groove allows the pulley to rotate more than one revolution, further reducing the size of the pulley. The input and output grooves can be combined into one continuous groove. The input and output cables can be a single continuous piece, eliminating cable terminations and reducing stress on the pulley.